

Chapter 5: Solutions to practice exam questions

Chapter 1: Mind, brain and body

Consciousness

Multiple-choice solutions

- 1 C William James described consciousness as an ever-changing stream of awareness.

Short-answer solutions

- 2 'Consciousness' is defined as the awareness of the subject's own existence and mental activities (including thoughts, sensations and feelings) and of objects and events in the external world.
- 3 The term 'state of consciousness' refers to the level of awareness that an individual has of both their internal processes and of external stimuli. Every individual experiences a range of different levels of consciousness throughout the progress of each day.

States of consciousness

Multiple-choice solutions

- 4 A Alcohol.
- 5 C The disruption of continuity of our memory over time.
- 6 D For André, playing the violin would be considered an automatic process because it did not interfere with the other task and could be performed with little conscious effort and minimal attention.
- 7 D A state of normal waking consciousness (as in William James' description of the stream of consciousness).

Short-answer solutions

- 8 • Awareness of thoughts, feelings, and sensations.
• Thinking is clear, organised and meaningful.
• Attention is able to be focused on the task at hand.
• Information can be retrieved from memory.
• Awareness of an individual's identity.
• Conscious of time limitations.
• Not easily influenced by suggestions.
- 9 Controlled processes are procedures that require higher levels of awareness, i.e. needing an ability to concentrate and focus our undivided attention. For example, the early stages of learning a complex, coordinated skill such as driving a car or knitting.

- 10 • Perceptual distortions, including changes to pain thresholds, or experiencing sensory stimulation more vividly, or losing the sense of where the self ends and the environment begins (such as the feeling of sinking into the floor when meditating).
• Cognitive distortions, including illogical or disjointed thinking which could affect the ability to form accurate memory and even memory lapses/blackouts.
• A disturbed sense of time (slowing down, or sped up).
• Changes in emotional feeling and self-control, including a loss of usual inhibitions and an openness to the influence of suggestions.

- 11 Automatic processes involve those actions that require little conscious effort and minimal attention, in other words, lower levels of awareness. They are usually well-rehearsed and may be performed unconsciously and/or simultaneously with other tasks. For example, walking to your classroom or singing along with your favourite song.

- 12 i Meditation.

- ii While in the meditative state, Annalise would be experiencing an altered state of consciousness.

- iii Any of the following:

- decreased physiological responses (heart rate, blood pressure, body temperature, respiration rate, oxygen consumption), which can also include a decrease in the experienced levels

of pain

- an increased feeling of relaxation and reduction in stress levels
- attention is shifted away from the individual and directed onto another focus
- a feeling of detachment from the individual's sense of self, as if being distinct and distant from them
- a perception of alterations in bodily sensations, including a change in the flow of energy in the body
- an increase in alpha and theta brainwaves
- a disturbed sense of time.

Allocate 1 mark for any of the above answers. Total 2 marks

- 13 While in a state of normal waking consciousness, we are aware of the variety of sensory inputs from the outside world along with our thoughts, feelings and reactions to these inputs. As we spend the majority of our life in this state, most people assume that this is our experience of 'reality' and it is this state that provides the baseline by which we judge all other states of consciousness.

Sleep

Multiple-choice solutions

- 14 A Brainwave recordings indicate that during sleep the brain changes in its pattern of activity.
- 15 D By keeping the animal immobile to conserve energy and to avoid accidents at night, sleep thereby promotes the survival of the organism.
- 16 B 'As people age, the percentage of time spent in NREM sleep increases whereas the proportion of time spent in REM sleep decreases.
- 17 C The restorative theory of sleep would explain why longer periods of sleep (especially stage 4) occur after heavy physical exercise.
- 18 B EEG patterns recorded during REM sleep are similar to those in the waking state.
- 19 D

NREM sleep helps to restore bodily processes and tissue damage, while REM sleep restores brain processes.

Short-answer solutions

20 An adult sleeps for approximately 8 hours per night, progressing through cycles of about 1½ hours. Periods of deep sleep (NREM4) occur earlier in the night and periods of REM sleep occur, on average, every 90 minutes. Each session of REM sleep progressively increases in length as the night goes on, starting at 10 minutes to 30+ minutes in the morning.

21 About 80 per cent, with more NREM sleep present during the first half of the night than the second.

22 Any of the following:

- Many animals do not have adaptive physical mechanisms to survive at night (for example, poor vision) so remain inactive by sleeping.
- By remaining inactive during sleep (that is, due to sleep paralysis) animals minimise attracting attention from predators at their most vulnerable time.
- To preserve energy, or reduce heat loss, at night by lowered physical activity level.

Allocate 1 mark for any of the above answers. Total 2 marks

23 • Inactive persons (e.g. disabled) do not sleep less than more active persons.
• Falls in body temperature and lower metabolic rate during sleep are consistent with the body conserving rather than restoring or rejuvenating itself.

1 + 1 = 2 marks

24 When asleep an animal is less alert (that is, in an ASC) and potentially more vulnerable to attack by predators.

Physiological responses which indicate different states of consciousness

Multiple-choice solutions

25 B
Beta waves.

26 B
NREM stage 2.

27 D
Meditation leads to an increase in alpha wave activity, which has brainwaves with low-medium amplitude and relatively high frequency.

28 D
Beta, alpha, theta and delta.

29 D
The brain activity observed during REM sleep is similar to that recorded in subjects who are wide awake.

30 C
When used in sleep laboratories, the sensors for the electromyograph are placed on either side of the jaw to measure changes in muscle tension.

Short-answer solutions

31 Heart rate may increase during certain altered states of consciousness, such as when an individual has taken certain stimulant drugs that will activate the sympathetic nervous system. Generally though, heart rate will decrease during other altered states, such as relaxing, meditating, and sleeping or while unconscious.

32 One of the autonomic responses that occur when the sympathetic nervous system becomes aroused is an increase in the activity of the sweat glands, which means a corresponding increase in the skin's conductivity for electrical current (or, conversely, a decrease in the skin's resistance to electrical current). The galvanic skin response may show an increase in electrical conductivity in states involving heightened emotions or would decrease in states involving lowered arousal, such as meditation or sleep.

33 Although body temperature does not vary much, researchers have found that body temperature drops by about 1 °C while we are asleep. If body temperature rises dramatically, as in a fever, an altered state of consciousness may be induced.

34 Physiological responses give a better indication of differing states of consciousness, as these are objective measures that also provide information about bodily functions in those states.

The self-report method involves asking the individual to describe what they are currently experiencing. It is a useful subjective measure; however individuals can be dishonest, may be unable to describe their experiences in words or may forget, intentionally or unintentionally, to provide crucial information to the researcher.

35 The electrical activity of the brain changes according to alterations in an individual's level of consciousness. Beta wave patterns indicate an individual is awake, alert and concentrating on external stimuli. Alpha waves are prominent in an awake, relaxed individual whose eyes are closed, or while daydreaming, or meditating, and are present in NREM stage 1 sleep. Theta brainwaves become present in NREM stage 1 sleep and remain through stage 2 into stage 3 sleep. Delta waves begin in NREM stage 3 sleep and dominate deep stage 4 sleep.

36 Any of the following:

- erratic high frequency/low amplitude brain activity reminiscent of beta waves
- increased electrical activity in eye muscles (i.e. rapid erratic eye movements)
- little or no electrical activity in body muscles (i.e. muscles relaxed to the point of paralysis, atonia)
- other autonomic levels (such as breathing, heart rate) increase.

Allocate 1 mark for any of the above answers. Total 2 marks

Sleep deprivation

Multiple-choice solutions

37 C
Disorientation, delusions, and hallucinations.

38 D
Mild REM sleep deprivation will lead to irritability and difficulty concentrating and performing simple tasks.

39 B
Cognitive disturbance; dizziness.

40 D
A microsleep is a very short period of sleep that occurs while a person is actually awake.

Short-answer solutions

41 Lethargy, irritability, headaches, loss of concentration, inattention, difficulty completing low level boring tasks, inefficiency, confusion or misperception. When allowed to go to sleep, the subject would fall asleep more quickly and sleep longer than usual.

42 More pronounced inefficiency and fatigue, visual hallucinations, disorientation, psychotic behaviour including paranoia and delusions. These are all temporary.

43 Performance on complex, intellectual tasks is not impaired, whereas an individual's ability to follow simple routines, as well as vigilance, attentiveness and mood, can be affected. Low level boring tasks are the most likely to be affected, as deprivation may affect motivation rather than ability.

Divisions of the nervous system

Multiple-choice solutions

44 A
The sympathetic nervous system.

45 C
The somatic nervous system.

46 B
The functioning of internal organs.

47 D
The parasympathetic nervous system.

Short-answer solutions

48, Somatic.

49 Autonomic.

50 i 'Fight-or-flight'.

ii Sympathetic.

The cerebral lobes and their functions

Multiple-choice solutions

- 51 C Parietal lobe.
52 D Temporal lobes.
53 B Occipital lobe.
54 D The association areas are directly related to such functions as language, memory and thinking.

- 55 B Reduced planning ability and changes in personality would result from frontal lobe damage.
56 D The motor cortex of the frontal lobes.

- 57 C Association areas.

Short-answer solutions

- 58 The motor cortex sends impulses to motor neurons, directing the muscular control of the body, enabling fine, coordinated movement of body parts.
59 The somatosensory cortex registers input from somatic (bodily) receptors, mediating our sense of touch, pressure, pain and temperature.
60 Auditory cortex; temporal.
61 • Wernicke's area helps us understand the meaning of spoken and written language. It enables an individual to read, comprehend and say a coherent sentence out loud.
• Wernicke's area is located in the left temporal lobe of the cerebral cortex.
62 The motor cortex; the right frontal lobe.
1 + 1 = 2 marks

- 63 i Aphasia.

- ii Broca's area (in the left frontal lobe) which controls the muscles that produce speech.
iii Bill's ability to speak is impaired, while his understanding of language is not affected. The left hemisphere is also indicated because of the paralysis down the right hand side of the body.

1 + 1 + 1 = 3 marks

- 64 Cortical mapping of the somatosensory areas in the parietal lobes has shown that the amount of the cortex allocated to certain body areas corresponds to their level of sensitivity. For example, the lips, mouth and throat are more sensitive to sensations than the hips and trunk as they are allocated a much larger cortical area.

Hemispheric specialisation

Multiple-choice solutions

- 65 B The right hemisphere controls non-verbal functions, while verbal functions are controlled by the left hemisphere.
66 B Activities involving visualisation.
67 C The corpus callosum.
68 C The activities of both hemispheres of the brain combine to produce most behaviour.

- 69 D The right cerebral hemisphere.

- 70 C A lesion of the right parietal lobe.

- 71 A Objects presented to the right visual field can be recognised and named verbally.

- 72 B He would be unable to describe the object.

Short-answer solutions

- 73 The corpus callosum is a large, dense bundle of nerve fibres linking the left and right cerebral hemispheres of the brain.

Its function is to enable these hemispheres to communicate with one another, disseminating information from the cerebral cortex on one side of the brain to the same region on the other side.

- 74 The left hemisphere of the brain of a typical individual deals with verbal and analytical functioning. These functions include: speaking, writing and language comprehension; logical thought encompassing mathematical ability; the judgement of rhythm and time; and ordering complex movements, particularly those required for speech and critical and analytical thought. Information is analysed and processed sequentially.

- 75 The right hemisphere of the brain of a typical individual mainly deals with non-verbal responses. These include: the recognition of faces, tunes and patterns; spatial skills; visualisation and manipulation; the detection and expression of emotion; as well as self-monitoring of behaviours. Information is processed holistically and simultaneously.

- 76 • Neglect refers to a failure to pay attention to items on the left side of an individual's visual space. For example, when shown a complete illustration and asked to replicate it, patients may only draw the right side.
• Additionally, outlines may be distorted. When asked to draw what they wish, patients' subject matter may be bizarre or repulsive in nature.
• Similarly, patients may also only shave the right side of their face, ignoring the left side.
• Because the right hemisphere controls facial recognition and emotion, patients may have poor relations with others and may be unable to recognise them.

Allocate 1 mark for any of the above answers. Total 3 marks

- 77 • Being presented to his left visual field, interpretation of the picture would take place in Barry's right hemisphere.
• In order to say the name of what he had seen, the information would need to be passed to the left (verbal) hemisphere.
• As the corpus callosum had been surgically severed, no such transfer could take place.

1 + 1 + 1 = 3 marks

The reticular activating system and thalamus

- 78 D Reticular activating system.

- 79 C Thalamus.

- 80 D Reticular activation system.

- 81 The thalamus receives and integrates sensory information (with the exception of smell), and relays this information to the appropriate part of the cerebral cortex for further processing.

Studies investigating cognitive processes

- 82 Perceptual anomalies occur when the objective reality of an existing physical stimulus is inconsistent with an individual's subjective perception.

- 83 The motion after-effect is a visual illusion creating the perception of motion where there is none. It is experienced when fixating a stationary stimulus after watching a moving visual stimulus with stationary eyes for an extended period (several seconds to a minute). The stationary stimulus then appears to move in the opposite direction to the original (physically moving) stimulus.

- 84 Change blindness is a phenomenon in visual perception in which very large changes occurring in full view within a visual scene are not detected by the observer.

- 85 Synaesthesia means 'joined sensation', referring to a condition whereby some people experience a sensory blending or crossover. Two or more senses are automatically and involuntarily coupled such that music is not only heard, but also felt, seen, or tasted.

Brain research techniques

Multiple-choice solutions

- 86 B
A case study.
- 87 D
A CT scan uses X-rays.
- 88 C
Positron emission tomography.
- 89 C
MRI can produce extremely detailed, three-dimensional images of the brain.
- 90 B
Electrical brain stimulation.

Short-answer solutions

- 91 The patient is surrounded by a large electromagnet and exposed to short, powerful bursts of strong magnetic fields. These stimulate protons in the brain's tissue to emit radio signals which are then detected and analysed by a computer to form an anatomical image of a 'slice' of the patient's brain.
- 92 Case studies involve an in-depth, intensive study of an individual, group, phenomena or situation, allowing analysis of a limited number of events or conditions and their relationships. Through observing the behavioural changes of patients with brain damage, researchers have been able to discover the functions of specific regions within the brain.
- 93 • Analysis of data is difficult due to its qualitative nature, often with no baseline for comparison. Such findings do not permit the researcher to identify any specific causal associations.
• Data collection is open to experimenter bias. Accounts can be partial, restricted to descriptive data of interest to the researcher.
• Poor representativeness and ability to be generalised.
• Subjects are therefore unusual, deviant, or extreme cases that might not represent the population at large.
• In clinical cases, the extent of the brain damage is not controllable or clearly localised to a specific area, causing a lack of precision in the results.

- 94 Because neurons use electricity to communicate, the EEG measures electrical activity in localised areas of the brain. A series of electrodes are attached to the surface of the scalp, and the activity of hundreds of thousands of neurons in the vicinity of each electrode is recorded, amplified and transferred to paper as wavelike patterns.
- 95 Penfield and his associates used electrical stimulation of the brain to map cortical functions. This method involves the application of a weak electrical current, usually in the form of a series of short pulses that mimic neural impulses, via tiny electrodes implanted into a specific locale in the brain. Electrical stimulation of parts of the brain often produced clear behavioural changes.
- 96 This technique applies a powerful magnetic field held close to the head which can briefly and focally disrupt neural activity in surface regions of the cortex in order to stimulate or inhibit activity in precise areas of the brain.
- 97 A series of X-rays are sent through a patient's head at different angles producing information that a computer then builds into detailed cross-sectional images (or slices) that show the structure of the brain.
- 98 The main aim of SPECT in brain imaging is to measure the regional cerebral blood flow by mapping the distribution of the injected radioisotopes in the brain. The radioactive chemical does not enter the brain itself but stays in the bloodstream, allowing examination of the brain's blood supply which is normally reduced to damaged areas.
- 99 With a PET scan, radioactive glucose or oxygen compounds are injected into the blood stream. The PET scanner detects gamma rays (positrons) emitted as the most active neuronal sites metabolise more of the radioactive compounds, enabling a computer to construct a series of colour-coded, functional pictures showing the activity levels of slices through the brain during different tasks.

100 The fMRI is able to detect brain function rather than solely brain structure, as with the MRI. During an fMRI experiment, the participant is required to carry out some cognitive task, consisting of periods of activity and periods of rest, while their brain is scanned repeatedly. During the activity, the magnetic resonance signal from the region of the brain involved in the task normally increases due to the flow of oxygenated blood into that region. Signal processing is then used to provide both an anatomical and a functional view of these regions.

Chapter 2: Memory

The nervous system and memory

Multiple-choice solutions

- 1 D
Consolidation.
- 2 D
An ability to remember past memories but no ability to form new ones.
- 3 B
Biochemical changes in synaptic function form different types of memory.

Short-answer solutions

- 4 Through his experiments, combined with later research on mice, Kandel determined that physical and biochemical changes in synaptic function form different types of memory.
- 5 Research suggests that the hippocampus is critical to the formation and consolidation of memories, playing a part in deciding if information received by the senses is worth remembering, then mapping and organising memories before directing them to other sections of the brain.
- 6 Consolidation refers to the period of time (at least 30 minutes) required for new information to be effectively transferred to become stable long-term memories.

2 marks

Memory decline over the lifespan

Multiple-choice solutions

- 7 D
Elderly people have lower motivation to remember new and meaningless information.

Short-answer questions

- 8 • Episodic memory within older people may be affected, tending to show some decline from ages 30–50 years. These memories are less well-learned and are more context-dependent and state-dependent in nature.
• Well-learned semantic memories are more easily accessed and less vulnerable to ageing.
• Procedural memory also appears to stay the same as when the person was younger, but the performance of tasks could be limited by physical factors.
- 1 + 1 + 1 = 3 mark

Amnesia, dementia and Alzheimer's Disease

Multiple-choice solutions

- 9 C
Retrograde amnesia.
- 10 D
Dramatic degradation of the reticular activation system. An additional characteristic is the development of tangles of neuronal fibres.
- 11 A
An anterograde amnesiac would probably have no ability to retain new, unrelated information.
- 12 Dementia is a condition characterised by a severe decline in mental functioning, especially memory loss, due to progressive destruction of brain tissue.

Short-answer solutions

Allocate 1 mark for a brief description of the condition and 1 mark for its cause.

Total 2 marks

- 13 Short-term memory is affected, leading to an inability to encode and learn new information, thereby impairing the transfer of novel memories to form long-term memory.

- 14 Areas storing long-term memories are affected, rendering the individual unable to access information learned prior to the accident/trauma.

- 15 The early stages of the disease are characterised by difficulty in remembering episodic memories. There can also be problems in remembering new information/recent semantic memory as well.

Models for explaining human memory

Short-answer solution

- 16 It is generally accepted that memory involves an active, information-processing system that receives, organises, stores and recovers information.

Levels of processing

Multiple-choice solutions

- 17 C Retention (storage).
18 B Retrieved.
19 A A mental picture of the word represents a structural code; using a definition represents a semantic code; and using sounds represents a phonemic code.

Short-answer solutions

- 20 Encoding; retrieval. $1 + 1 = 2$ marks
21 Storage (or retention).
22 • Shallow encoding focuses on superficial aspects of the information that needs to be remembered, whereas deep encoding involves thinking about the meaning of the information, drawing connections between it and other memories.
• Deep encoding is better.

- The associations formed between the information to be remembered and other items in memory make it easier to retrieve as it is possible to access it using a number of different cues.
 $1 + 1 + 1 = 3$ marks

Multi-store model of memory

Multiple-choice solutions

- 23 D Selective attention.
24 A Chunking.
25 B Rehearsal.
26 A Personal recollections of life events.
27 D The recency effect.

- 28 A A limited amount of encoded information while it is required for further manipulation and processing.

- 29 C Seven.
30 C 18–20; chunking. A is incorrect as 'chunking' increases the storage capacity of short-term memory, not its duration.

- 31 A Maintenance rehearsal uses rote repetition, whereas elaborative rehearsal involves semantic processing.

- 32 A Declarative memory.

- 33 C Short-term memory.

- 34 B If prevented from being able to rehearse the information, participants' ability to recall the letters declines rapidly after about 20 seconds.

- 35 C Semantic memory.

- 36 C The primacy effect.

- 37 D Words at both the beginning and end of the list.

Short-answer solutions

- 38 Echoic memory is the sensory memory which retains auditory information for about 3–4 seconds so that we can process sounds and interpret their meaning.

- 39 Chunking involves grouping items into larger units to extend/expand the capacity of STM. 2 marks

- 40 Rehearsal.

- 41 Procedural memory.

- 42 Semantic memory.

- 43 The serial position effect states that the recall of items in a list is superior for items at the beginning of the list due to the primacy effect, and for items at the end of the list due to the recency effect. The expected curve of the graph would therefore resemble a large 'U' shape.

- 44 • Sensory memory is the initial stage of memory with a large capacity, but is only capable of storing information for very brief time periods (a fraction to a few seconds).

- Short-term memory holds a limited amount of information (approximately seven plus or minus two items) for approximately 20 seconds.

- Long-term memory theoretically has an unlimited capacity and is relatively permanent, storing information for extensive periods of time (up to a lifetime).

$1 + 1 + 1 = 3$ marks

- 45 The function of sensory memory is to briefly save our sensory impressions so that a slight overlap occurs, thereby enabling us to perceive our environment in an uninterrupted fashion rather than as a series of disjointed images and sounds.

- 46 Any of the following:

- Iconic memory:
 - is a type of sensory memory for visual information
 - stores information in a raw, literal, unencoded form
 - retains visual images for about 0.3 seconds before it starts to rapidly fade away
 - enables us to clearly distinguish environmental stimuli rather than visual images overlapping or blurring together
 - allows us to perceive smooth motion rather than discrete, disjointed images (as in a movie).

Allocate 1 mark for any of the above answers. Total 2 marks

- 47 Information for short-term memory comes from the material we pay attention to within our sensory register and/or information retrieved from our long-term memory.

- 48 • Elaborative rehearsal is the process of making new information more meaningful by linking it to material already stored in memory.

- A range of answers would be acceptable here, including mnemonic techniques, mental imagery, or other examples which link material in new, novel, or bizarre ways.

$1 + 1 = 2$ marks

- 49 i Semantic memory.

- ii Procedural memory.

- iii Episodic memory.

$1 + 1 + 1 = 3$ marks

- 50 Semantic network; concepts (nodes); links.

$1 + 1 + 1 = 3$ marks

- 51 • The primacy effect is demonstrated by the superior recall for items at the beginning of the list.

- It is explained as being due to these items being rehearsed enough times to transfer these into the long-term memory.

$1 + 1 = 2$ marks

- 52 • The recency effect is the tendency to recall later information towards the end of a list.

- This would be due to the fact that items are still in short-term memory.

$1 + 1 = 2$ marks

53 Information held in sensory memory cannot be rehearsed to prolong its duration as we have no voluntary control over its rapid decay.

54 As short-term memory fades after about 20 seconds, the process of rehearsal serves to renew the information via some form of mental repetition or processing, so that it can be retained in short-term memory for a longer period of time.

- 55 • Retrieval of information is often more difficult from episodic memory.
- These memories are less well-learned, and are more context-dependent and state-dependent in nature.

1 + 1 = 2 marks

Working memory

Multiple-choice solutions

- 56 A The articulatory loop.
- 57 C

Working memory includes a processing system along with storage; short-term memory just stores information.

Short-answer solutions

58 The term 'working memory' refers to an active system that provides temporary storage for the manipulation of the information necessary for such complex cognitive tasks as language comprehension, learning, reasoning and problem solving. Working memory acts as a workbench where all the resources needed for a particular task are placed.

- 59 • The most important aspect of working memory is the central executive, which is responsible for the selection, initiation and termination of processing routines (e.g., encoding, storage and retrieval).
- The articulatory loop is responsible for storing speech-based information. It is comprised of a phonological memory store, which can hold traces of acoustic material for about two seconds unless it is maintained through the use of the sub-vocal rehearsal.
- The visuo-spatial sketchpad is responsible for the temporary storage and manipulation of visual and spatial information.

- The episodic buffer is responsible for the temporary storage of representations that incorporate phonological, visual, spatial and other information to form integrated, meaningful units with time sequencing (or chronological ordering).

1 + 1 + 1 + 1 = 4 marks

Theories of forgetting

Multiple-choice solutions

- 60 C Forgetting.
- 61 D Suppression.

- 62 A Decay.

63 B The 'tip-of-the-tongue' phenomenon.

- 64 D Proactive interference.

- 65 C Motivated forgetting.

- 66 B Retroactive interference.

- 67 D Sleep.

- 68 B Decay theory of forgetting.

Short-answer solutions

69 Forgetting involves the loss of information or the inability to access previously encoded information within memory.

70 Proactive interference.

71 Retroactive interference.

72 Motivated forgetting (or repression, or psychogenic amnesia).

73 Information that cannot be retrieved appears to be lost, but forgetting due to retrieval failure is not permanent as information can be retrieved with the correct 'cues'.

74 According to the interference theory, forgetting results from competing associations between information stored in long-term memory. Learning some material may disrupt the retrieval of other information, such that different items stored in memory get confused with what you're trying to remember.

75 Any of the following:

- much of the evidence for motivated forgetting has come from clinical case studies, hence an abnormal population evidence for this approach has not come from any controlled experiments (and would not be possible due to ethical considerations).

Allocate 1 mark for any of the above answers. Total 1 mark

76 According to decay theory, memory traces that store data within the brain fade or disintegrate over time unless they are reactivated by occasional use.

- 77 • The 'tip-of-the-tongue' phenomenon occurs when an individual is confident that they know something, but are not quite able to access it from memory at that particular point in time.
- As the apparently lost information can, over time, eventually be retrieved from long-term memory, this phenomenon suggests that other factors rather than decay of memory traces over time may be responsible for memory loss. It may be that, at the time, the right cue was unavailable to bring the memory back out of storage.

1 + 1 = 2 marks

The forgetting curve

Multiple-choice solutions

78 C We forget rapidly at first and then more slowly as time progresses.

79 D 80%.

The relative sensitivity of measures of retention

Multiple-choice solutions

80 A Recall.

81 C Recognition.

82 B Relearning.

83 B Recall.

84 D How much faster an individual learns something the second time around. The savings score is an indicator of relearning.

Short-answer solutions

85 Recall.

86 Recognition.

- 87 • Relearning is the most sensitive measure of retention.
- This method is able to measure some memory of information even when an individual is unable to do so through recall and recognition.

1 + 1 = 2 marks

Memory enhancement

Multiple-choice solutions

88 C State-dependent learning.

89 D The peg-word method.

90 A Context-dependent cues.

91 C Narrative chaining.

92 A An acrostic.

Short-answer solutions

- 93 • Elaboration involves a process of making new information more meaningful by linking it to material already stored in memory.
- This process helps to link new information into the established semantic network.

1 + 1 = 2 marks

- 94 • The method of loci.
- This technique uses familiar locations as cues to aid in the retention and retrieval of items to be memorised.
- 95 • An acronym is a method of chunking information for retention by creating a pronounceable word using the first letters of a group of words.
- Any appropriate example could be used here (such as those in the summary notes in Chapter 2). It must be pronounceable, not just an abbreviation.

1 + 1 = 2 marks

Eyewitness testimony

Multiple-choice solutions

- 96 C Smashed.
- 97 A Context cues.

Short-answer solutions

- 98 • Response bias – the different speed estimates occurred because the critical word (e.g. 'smashed' or 'hit') influences or biases a person's response.
- Memory is altered – the critical word changes a person's memory so they actually 'see' the accident differently, i.e. more or less severe.

1 + 1 = 2 marks

- 99 1 The person's own perception.
- 2 Information supplied after the event (such as leading questions).

1 + 1 = 2 marks

- 100 This research suggests that:
- memory is easily distorted by questioning technique, and
 - information acquired after the event can merge with original memory causing inaccurate recall or reconstructive memory.

1 + 1 = 2 marks

Chapter 3: Research methods

Scientific method

Multiple-choice solution

- 1 C An experiment.

Short-answer solution

- 2 Because researchers are able to systematically manipulate the independent variable(s) in formal experiments, they are able to test causal links between the variables involved.

Operational hypotheses

Multiple-choice solutions

- 3 C The dependent variable.
- 4 D Music.

Short-answer solution

- 58 • A research hypothesis is a testable statement predicting the outcome of a research study, whereas an operational hypothesis goes further to express this prediction in practical terms.
- An operational hypothesis describes how the researcher will determine the presence and levels of the variables under investigation for the population under study in order to put their research hypothesis into operation.

1 + 1 = 2 marks

Participant selection and allocation

Multiple-choice solutions

- 6 C A stratified sample.
- 7 C To ensure that the subjects chosen form a representative subset of the population.

Short-answer solutions

- 8 Random selection of subjects is used to try to control for subject variables in order

to make the sample representative of the population under study.

- 9 • The control group.
- Its purpose is to provide a basis for comparison against the experimental group (or to compare the effect of the IV with the experimental group).

1 + 1 = 2 marks

Extraneous variables

Multiple-choice solutions

- 10 C The researchers are trying to control the placebo effect.

- 11 C Independent-groups design.
- 12 C Matched-participants design.

- 13 A Single-blind; placebo.

Short-answer solution

- 14 An experimenter effect is said to have occurred if the experimenter's personal characteristics, or expectations, or treatment of the data influence the results of the experiment.

Statistics

Multiple-choice solutions

- 15 A Descriptive statistics.
- 16 C Statistical significance is based on the probability that the results obtained in an experiment are not due to chance.

Short-answer solution

- 17 Inferential statistics comprise formal data analysis involving mathematical calculations that enable the researcher to draw conclusions about the likelihood of the results obtained being due to the effects being tested or whether the results are due to chance factors.

Research findings

Short-answer solutions

- 18 • Based on the results obtained from the sample, a conclusion is a statement as to whether or not the hypothesis has been supported.
- Generalisations apply these conclusions beyond the sample to the wider population in other settings outside the study.

1 + 1 = 2 marks

Ethical principles

Multiple-choice solutions

- 19 C The participants' right to continue even if they are exhibiting signs of discomfort or distress. All of the choices are ethical considerations except for C. Should a participant show any sign of distress, the researcher is obligated to stop the experiment and tend to the welfare of the participant, whether they request it or not.
- 20 B Confidentiality.
- 21 D All of the alternatives are correct.

Short-answer solutions

- 22 • The overriding principle involved in psychological research with human participants is the preservation of their physical and psychological welfare through the provision of appropriate levels of care.
- As such, psychologists must ensure that they apply ethical principles to ensure that participants in their research leave the experiment in as similar a state as possible to how they entered it.

1 + 1 = 2 marks

Miscellaneous questions

Short-answer solution

- 23 An operational hypothesis for this ERA would be along the lines of: the Year 12 students sampled would recall more words from the beginning and end of the first list, but would only show better recall for words at the beginning of the second list.

- 24 • The IV was the amount of delay between the presentation of the list and free recall (no delay versus 30 seconds).
 • The DV was the recall rate for each word in the list (probably expressed as a percentage rather than as a frequency).
 $1 \div 1 = 2$ marks
- 25 The repeated-measures design.
 $1 \div 1 = 2$ marks
- 26 • To minimise individual differences due to subject variables between conditions.
 • To minimise (economise on) the number of participants.
 $1 \div 1 = 2$ marks
- 27 • Possible carryover effects, where knowledge from a previous condition affects or influences performance on a later condition.
 • The time interval between repeated testing may lead to changes in the participants' characteristics (i.e. history effects) potentially confounding the effect of the treatment variable.
- 28 For results to be considered statistically significant, an appropriate p value would be $p \leq 0.05$. (Lower probabilities may be possible, but convention generally accepts $p \leq 0.05$ as the appropriate cut off.)
- 29 The concept of statistical significance is based on the probability that the results obtained in an experiment are not due to chance factors. The lower the probability, the more significant the results.
- 30 i Voluntary participation was not present in this activity, as the teacher had in effect coerced the students into participating by saying that 'they all had to perform some memory tests as part of a research task to meet the requirements for a learning outcome'.
 ii There was an attempt at confidentiality as the teacher advised the students that 'no names would be attached to any of the results' (although collation of the data may have been done by asking students to put their hands up within the class, and it is probable that students would have compared results with one another).

